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WESTMAN CHAMPLIN & KELLY, P.A.
SUITE 1400
900 SECOND AVENUE SOUTH
MINNEAPOLIS, MN 55402-3319

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**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

MAILED

SEP 13 2007

GROUP 2800

Application Number: 09/667,297
Filing Date: September 22, 2000
Appellant(s): LOVEGREN ET AL.

Judson K. Champlin
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed May 07, 2007, appealing from the Office action mailed August 23, 2006.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

| | | |
|---|---|---|
| 6,626,038 | CARSELLA et al. | 9-2003 |
| 5,609,059 | MCEWAN | 3-1997 |
| 5,134,377 | REDDY, III et al. | 7-1992 |
| 6,087,977 | ROST | 7-2000 |
| 3,812,422 | DECAROLIS | 5-1974 |
| 5,672,975 | KIELB et al. | 9-1997 |

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 17-19 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,626,038 to Carsella et al. (incorporating by reference U.S. Patent No. 5,609,059 to McEwan) in view of U.S. Patent No. 5,134,377 to Reddy, III et al.

MPEP §2163.07(b) [R-3]: Incorporation by Reference: Instead of repeating some information contained in another document, an application may attempt to incorporate the content of another document or part thereof by reference to the document in the text of the specification. The information incorporated is as much a part of the application as filed as if the text was repeated in the application, and should be treated as part of the text of the application as filed.

Carsella discloses a radar level transmitter for providing level detection of

materials in a container (Carsella; column 2, lines 48-57), the transmitter comprising an antenna (McEwan; column 6, lines 12-16), a transceiver coupled to the antenna (McEwan; column 6, lines 12-16) and configured to transmit a microwave (i.e., 200ps = 5 GHz ) (McEwan; column 8, lines 40-41) pulse having a transmit pulse amplitude using the antenna and produce a signal representing reflected wave pulses (McEwan; column 6, lines 22-25), a microprocessor system coupled to the transceiver and adapted to control the transceiver and process the signal (McEwan; column 6, lines 57-59 and column 9, lines 45-47), and a level calculation module executable by the microprocessor system and adapted to establish a level in the container of a first material interface using the signal and a threshold (McEwan; column 8, line 66 to column 9, line 3 and column 9, lines 32-47).

Carsella also discloses that a fiducial interface is formed between an antenna (McEwan; column 6, lines 12-14) and the first material and the method including detecting a fiducial pulse, using a corresponding fiducial threshold, corresponding to a portion of the transmitted microwave pulse reflected from the fiducial interface (McEwan; column 6, lines 43-53) which is used in combination with the first threshold value to determine the level in the container (McEwan; column 8, line 66 to column 9, line 3 and column 9, lines 32-47).

Carsella also discloses the microprocessor is adapted to receive, from an operator, information related to properties of the materials (i.e. dielectrics) (Carsella; column 5, lines 30-37) and that the amplitude of the reflected pulses are corrected by gain based on the properties of the materials (Carsella; column 4, lines 43-48).

Carsella discloses that the information related to properties of the materials comprises dielectric parameters having a value corresponding to a dielectric of a first material adjacent to the antenna and a second dielectric parameter having a value corresponding to a dielectric of a second material located below the first material (Carsella; column 1, lines 25-34 and column 8, lines 1-5).

Carsella discloses including an input/output port adapted to transmit a level output that is indicative of the first material interface (McEwan; column 9, lines 32-47).

Carsella further discloses that a first material interface is formed between first and second materials (McEwan; column 6, lines 16-18).

Carsella also discloses a second material interface located between second and third materials, the third material below the second material, and the method including detecting a second reflected wave pulse corresponding to a portion of the transmitted microwave pulse reflected from the second material interface (McEwan; column 6, lines 60-67 and column 7, lines 62-65).

As noted above, the invention of Carsella teaches many of the features of the claimed invention and while Carsella does teach including detection thresholds for detecting reflections at the first, second, and fiducial interfaces (McEwan; column 8, line 66 to column 9, line 3), Carsella does not specifically include the means for setting the detection thresholds.

Reddy discloses a method for use by a level transmitter to detect a reflected pulse of a transmitted pulse (column 1, lines 45-54) from a first material interface

(column 3, lines 52-56), the method comprising calculating estimated reflection pulses as a function of a reference amplitude of the transmitted microwave pulse and the amplitude of the reflected pulse amplitude and setting a corresponding threshold values based on the estimated reflected pulse amplitude (column 1, line 64 to column 2, line 2 and column 9, lines 6-20) and detecting the reflected pulse from the first material interface using the threshold (column 1, lines 51-54), wherein the threshold calculation is performed using a microprocessor system (column 3, line 66 to column 4, line 6, column 5, lines 21-23, and column 9, lines 6-20).

It would have been obvious to one having ordinary skill in the art to modify the invention of Carsella to specify include the means for setting the detection thresholds, as taught by Reddy, because the combination would have provided an improved means for setting the thresholds of Carsella that, as suggested by Reddy, would have provided proper pulse detection without the detection of extraneous noise by employing a threshold specifically adapted to the particular conditions being measured (column 1, line 64 to column 2, line 2 and column 8, line 63 to column 9, line 5).

Further since the invention of Carsella discloses that the microprocessor is adapted to receive, from an operator, information related to properties of the materials (i.e. dielectrics) (Carsella; column 5, lines 30-37) and that the amplitude of the reflected pulses are corrected by gain based on the properties of the materials (Carsella; column 4, lines 43-48) with the information related to properties of the materials comprising dielectric parameters having a value corresponding to a

dielectric of a first material adjacent to the antenna and a second dielectric parameter having a value corresponding to a dielectric of a second material located below the first material (Carsella; column 1, lines 25-34 and column 8, lines 1-5) and the invention of Reddy teaches calculating a threshold as a function of a reference amplitude of the transmitted microwave pulse and the amplitude of the reflected pulse (column 1, line 64 to column 2, line 2 and column 9, lines 6-20), the combination would have calculated the threshold as a function of the transmit pulse amplitude and the information related to the properties of the materials.

Further still, since the invention of Carsella specifically discloses employing thresholds for detecting reflections at the first, second, and fiducial interfaces (McEwan; column 8, line 66 to column 9, line 3) and Reddy suggests employing thresholds specifically adapted to the particular conditions being measured, the combination would have employed a specific threshold for detecting each of the reflections at the first, second, and fiducial interfaces.

Claims 25, 31, 34, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carsella in view of Reddy, III et al. and further in view of U.S. Patent No. 6,087,977 to Rost.

As noted above, the invention of Carsella and Reddy teaches many of the features of the claimed invention and while the invention of Carsella and Reddy does teach preventing attenuation error in the reflected pulse measurement (McEwan;

column 5, lines 15-21), the combination does not specifically teach calculating the estimated pulse/threshold value as a function of a correction/attenuation factor.

Rost teaches false alarm rate and detection probability in a receiver comprising a receiver for receiving radar signals (column 1, lines 11-21) using a threshold level that is calculated in accordance with a corrective attenuation factor (column 2, lines 51-58).

It would have been obvious to one having ordinary skill in the art to modify the invention of Carsella and Reddy to specifically include calculating the estimated pulse/threshold value as a function of a correction/attenuation factor, as taught by Rost, because, as suggested by Rost, the combination would have improved the probability of detecting the signals and increased the accuracy of the detection by accounting for degradations of the signal caused by reflections at a range far from the transceiver (column 2, lines 22-25 and column 6, lines 22-49).

Claims 20, 37, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carsella in view of Reddy, III et al. and further in view of U.S. Patent No. 3,812,422 to De Carolis.

As noted above, the invention of Carsella and Reddy teaches many of the features of the claimed invention and while the invention of Carsella and Reddy teaches setting dielectric constants of the materials which are provided in order to determine material interface thresholds, the combination teaches inputting the dielectric constants by an operator rather than by a dielectric constant calculator.

De Carolis teaches an apparatus for measuring the levels of fluids and the dielectric constants of the same comprising a dielectric constant calculator (i.e. measuring instrument) (Figure 2) determining the dielectric constant of the second material (i.e. material other than air) as a ratio of the amplitude of the transmit pulse and the amplitude of the reflected pulse (column 1, lines 30-32 and column 5, lines 29-36).

It would have been obvious to one having ordinary skill in the art to modify the invention of Carsella and Reddy to include a dielectric constant calculator for calculating the dielectric constants of the materials, as taught by De Carolis, because the combination of Carsella and Reddy requires that the dielectric constants of the materials be set by a user and De Carolis suggests a combination that would have provided means for automatically determining the dielectric constants, thereby reducing the burden on the user (column 1, lines 30-32 and column 5, lines 29-36).

With respect to claims 37 and 45, since the invention of Carsella and Reddy determines the thresholds based on the dielectric constants of the fluids and further specifically indicates that the dielectric constant of the fluids vary with temperature (Carsella, column 5, lines 5-6) and the invention of De Carolis teaches a method for automatically determining the current dielectric constants of the fluids for determining the thresholds, it is considered inherent that the determined thresholds are also a function of temperature.

Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carsella in view of Reddy, III et al. and further in view of U.S. Patent No. 5,672,975 to Kielb et al.

As noted above, the invention of Carsella and Reddy teaches many of the features of the claimed invention, and while the invention of Carsella and Reddy does teach the radar transmitter with a keypad for entering information related to properties of the materials received from an operator (i.e. dielectric constants) (Carsella; column 5, lines 30-37) connected as part of a process control loop (Carsella; column 3, lines 19-28) for connection to remote devices (Carsella; column 9, lines 8-11), the combination does not explicitly indicate that the information is received over the process control loop.

Kielb teaches a two-wire level transmitter for sensing the level of liquids in a tank (column 1, lines 40-58) connected over a process control loop (column 2, lines 10-13) wherein commands are set to the transmitter from a control room over the process control loop (column 4, lines 49-58).

It would have been obvious to one having ordinary skill in the art to modify the invention of Carsella and Reddy to explicitly indicate that the information is received over the process control loop, as taught by Kielb, because the invention of Carsella and Reddy does implement a process control loop for remote communication and, as suggested by Kielb, the combination would have reduced the burden of the user by not requiring the user to be local to the tank being monitored but instead allowing the user to input information and/or commands, such as the information related to

properties of the materials received from an operator in Carsella and Reddy, from a remote location (column 4, lines 20-32 and 49-58).

**(10) Response to Argument**

Appellant argues:

> In the paragraph at the middle of page 5 of the Final Office Action, Reddy is relied upon as showing a, "method comprising calculated estimated reflection pulses as a function of a reference amplitude of the transmitted microwave pulse and the amplitude of the reflected pulse amplitude and setting a corresponding threshold values [sic] based upon the estimated reflected pulse amplitude." However, the cited sections of Reddy (column 1, line 64 to column 2, line 2 and column 9, lines 6-20) refer to an "auto referencing step" in which a "detection threshold" is reduced repeatedly "by one step", "until a reflection is received which exceeds the threshold". (See column 9, lines 10-15). Thus, this is not an estimation of a threshold but is the direct measurement of a comparison of an adjustable threshold with a received signal. Based upon this comparison, a threshold "up one step" is stored in memory for future use. (Column 1, lines 15-20).
>
> Thus, the cited section of Reddy III does not show calculating an estimated fiducial pulse amplitude. Instead, it simply shows comparing a received amplitude level to a threshold level which is adjusted.
>
> Further, claim 17 states that the threshold calculation module calculates an estimated first pulse amplitude related to a reflected wave pulse from a first material interface between first and second materials. Thus, claim 17 includes calculating two estimated pulse amplitudes, an estimated fiducial pulse amplitude and an estimated first pulse amplitude. In the cited section, the Reddy reference shows no calculation of a second estimated pulse amplitude.
>
> Paragraph 7 on page 11 of the Advisory Action of August 23, 2006, states that the "estimation" disclosed by Appellant is an "estimation" because it was calculated based upon a correction factor and/or dielectric parameters. This statement is partially correct. The specific language in claim 17 states that the threshold calculation module is adapted to calculate an estimated fiducial pulse amplitude and an estimated first pulse amplitude. The cited Reddy III reference shows no such calculation of estimations. That reference only uses empirical measurements in order to arrive at a threshold.

The Examiner asserts that Reddy, III, discloses:

> In the autoreferencing step, the negative detection threshold is set at a maximum positive value by MCU 302 (the threshold is inverted by amplifier 310 to produce the negative threshold). A launch pulse is then sent down a selected cable. If the level of any reflection seen at the non-inverting input of comparator 314 does not exceed the threshold at the inverting input of the comparator, then MCU 302 reduces the detection threshold by one step and repeats the process until a reflection is received which exceeds the threshold. MCU 302 then steps the threshold up one step to complete the autoreferencing of that cable. The negative detection threshold for that particular cable is then stored in the EEPROM internal to MCU 302, where it may be recalled for later use. (column 9, lines 6-20)

Based on the cited section, the Examiner first disagrees with Appellant's argument that Reddy, III, discloses threshold setting through direct measurement. Instead, the Examiner asserts that Reddy, III, determines if the level of any reflection seen at the non-inverting input of a comparator exceeds a threshold. The threshold is iteratively adjusted until any level of reflection exceeds the threshold at which point the threshold, corresponding to a reflected pulse amplitude, is estimated by stepping the threshold up one step. Such a disclosed method does not perform a direct measurement of the reflected pulse for threshold determination, but rather uses the detection of reflected pulses at various thresholds and estimates a reflected pulse amplitude by "stepping up" a threshold that detects a reflection. The resulting threshold that is set for level detection is properly considered to be calculated as it is set by determining a value that detects a pulse and then adding a "step" to result in a final value. The resulting threshold is also properly considered to be estimated as the "steps" are unspecified intervals that do not directly equate to the reflected pulse and as such will most likely not be exactly equal to the reflected pulse, but rather be

a general estimate. Therefore, the Examiner asserts that Reddy's disclosure of comparing an input to various thresholds followed by stepping the threshold up one step can properly be considered "calculating an estimated pulse amplitude".

The Examiner further asserts that the estimating step is disclosed by Appellant on page 16, lines 1-10, specifically:

> A reference amplitude is set to a value that relates to the amplitude of the transmitted microwave pulse, at step 64. At step 66, a second dielectric parameter is set to a value that corresponds to the dielectric of second material 14. At step 68, an estimated first amplitude is calculated as a function of the reference amplitude, the correction factor, the first dielectric parameter, and the second dielectric parameter.

Therefore, the pulse "estimation" disclosed by Appellant is only an "estimation" because it is calculated based on a correction factor and/or dielectric parameters.

The Examiner asserts that this is also met by the combination of Carsella and Reddy, specifically, since the invention of Carsella discloses that the microprocessor is adapted to receive, from an operator, information related to properties of the materials (i.e. dielectrics) (Carsella; column 5, lines 30-37) and that the amplitude of the reflected pulses are corrected by gain based on the properties of the materials (Carsella; column 4, lines 43-48) and the invention of Reddy teaches calculating a threshold as a function of a reference amplitude of the transmitted microwave pulse and the amplitude of the reflected pulse (column 1, line 64 to column 2, line 2 and column 9, lines 6-20), the combination would have calculated the threshold as a

function of the transmit pulse amplitude and the information related to the properties of the materials.

Specifically, Carsella discloses:

> The third potentiometer DP3 is used for the gain adjustment. The gain adjustment controls the amplitude of the return signal as will appear below. The amount of reflected energy depends on the dielectric of the material. The gain adjustment controls the amplitude of the analog signal regardless of the media. (column 4, lines 43-48)
>
> The operation of the program in the microprocessor 32 begins at a start node 50. Thereafter, the window offset value is read from memory 34 at a block 52. The conversion factor is read from the memory 34 at a block 54. Using the display/pushbutton interface 36, the user enters the probe type, probe length and dielectric of the media at a block 56. Thereafter, the program enters an automatic setup routine for controlling further operation. (column 5, lines 30-37)

Thereby indicating that the amplitude of the reflected pulses are corrected by gain based on the entered dielectrics.

Reddy, III, discloses:

> Prior to normal monitoring, the controller means autoreferences each cable to generate the predetermined thresholds. The autoreferencing step involves determining the normal reflections which can be expected from a cable, and then setting the detection threshold for that particular cable to a value slightly greater than the greatest normal reflection. (column 1, line 64 to column 2, line 2)
>
> In the autoreferencing step, the negative detection threshold is set at a maximum positive value by MCU 302 (the threshold is inverted by amplifier 310 to produce the negative threshold). A launch pulse is then sent down a selected cable. If the level of any reflection seen at the non-inverting input of comparator 314 does not exceed the threshold at the inverting input of the comparator, then MCU 302 reduces the detection threshold by one step and repeats the process until a reflection is received which exceeds the threshold. MCU 302 then steps the threshold up one step to complete the autoreferencing of that cable. The negative detection threshold for that particular cable is then stored in the

EEPROM internal to MCU 302, where it may be recalled for later use. (column 9, lines 6-20)

Thereby disclosing the calculation of a threshold as a function of a reference amplitude of the transmitted microwave pulse and the amplitude of the reflected pulse.

Therefore, since the invention of Reddy, III teaches calculating the thresholds based on normal reflection that can be expected and Carsella teaches that the normal reflection should be adjusted based on the dielectrics, such a combination would calculate a threshold as a function of an amplitude of the reflected pulse and the corresponding dielectrics entered to correct the amplitude.

With respect to Appellants arguments regarding the calculation of both fiducial and first pulse amplitudes, the Examiner asserts, as noted above, the combination does teach calculating estimated pulse amplitudes and further, Appellant has not indicated why the assertion provided by the Examiner in the Final Office Action mailed August 23, 2006, is incorrect with respect to the fiducial and first pulses, specifically:

> "...since the invention of Carsella specifically discloses employing thresholds for detecting reflections at the first, second, and fiducial interfaces (McEwan; column 8, line 66 to column 9, line 3) and Reddy suggests employing thresholds specifically adapted to the particular conditions being measured, the combination would have employed a specific threshold for detecting each of the reflections at the first, second, and fiducial interfaces."

Appellant argues:

> Claim 18 states that the calculation of the second threshold value is a function of a transmit pulse amplitude and information received which is related to a dielectric constant of the third material. The first full paragraph of page 6 of the Final Office Action appears to address this claim. That paragraph relies on Carsella as showing information received from an operator related to the properties of the material and cites Carsella column 5, lines 30-37. Further in that paragraph of the Final Office Action, the gain in Carsella is corrected based upon properties of the material. That same paragraph then goes on to bring in the Reddy reference as showing "calculating a threshold" and states that it would therefore be obvious to have "calculated the threshold as a function of the transmit pulse amplitude in the information related to the properties of the material." However, there is no suggestion of the two references that this can be achieved. In fact, the Reddy reference specifically teaches against such a combination and is directed to the use of "auto referencing" in which direct measurements are used to establish a threshold.

The Examiner asserts that, as described in the Final Office Action mailed August 23, 2006:

> Further since the invention of Carsella discloses that the microprocessor is adapted to receive, from an operator, information related to properties of the materials (i.e. dielectrics) (Carsella; column 5, lines 30-37) and that the amplitude of the reflected pulses are corrected by gain based on the properties of the materials (Carsella; column 4, lines 43-48) with the information related to properties of the materials comprising dielectric parameters having a value corresponding to a dielectric of a first material adjacent to the antenna and a second dielectric parameter having a value corresponding to a dielectric of a second material located below the first material (Carsella; column 1, lines 25-34 and column 8, lines 1-5) and the invention of Reddy teaches calculating a threshold as a function of a reference amplitude of the transmitted microwave pulse and the amplitude of the reflected pulse (column 1, line 64 to column 2, line 2 and column 9, lines 6-20), the combination would have calculated the threshold as a function of the transmit pulse amplitude and the information related to the properties of the materials.

The Examiner asserts, that as described above, the invention of Reddy, III, does not use only a direct measurement method, but rather the final threshold is

calculated by performing an estimation based on a current threshold, a "step" interval, and a corresponding reflected pulse. Therefore, Carsella's teaching of using the dielectrics of the materials in order to correct the pulse amplitudes is properly applied to the calculation in Reddy, III, to provide accurate threshold determination over a wide variety of materials with different dielectrics.

Appellant argues:

> Claim 25 was rejected in paragraph 4 of the Final Office Action based upon Carsella in view of Reddy III and further in view of Rost. Claim 25 states that the first threshold and claim 34 states that the fiducial threshold value are is further calculated as a function of at least one of an attenuation factor and a range factor. Column 1, lines 11-21 of Rost are cited. As noted in that section of Rost, the reference relates to search and surveillance type radar susceptible to undesired echoes or return signals from adverse weather conditions and surface clutter. This is not the same field as a radar level transmitter as set forth in the pending claims. Therefore, the reference should not be combined with the others. Further, Paragraph 4 of the Final Office Action goes on to cite column 2, lines 51-58 of Rost as showing a first threshold value which is calculated as a function of at least one of an attenuation factor and a range factor. However, that section of Rost simply describes varying threshold values, "in coordination with varied attenuation of the amplitude provided by the sensitivity time control." That section of Rost does not describe <u>calculating</u> a threshold based upon an <u>attenuation</u> or a <u>range factor</u>.

The Examiner first asserts that regardless as to whether the invention of Rost discloses a preferred embodiment of surveillance radar, Rost's teachings of radar threshold level calculations are still relevant to radar used in other environments. As such, the Examiner maintains that the invention of Rost can be properly combined with Carsella and Reddy, III.

Further, the Examiner disagrees that the cited sections of Rost does not describe calculating a threshold based upon an attenuation or a range factor as Rost discloses:

> wherein the threshold associated with the detection threshold signal is selectively variable such that the threshold may be varied in coordination with the varied attenuation of the amplitude provided by the sensitivity time control in order that either a probability of false target detection or a probability of actual target detection (but preferably both) is substantially improved. (column 2, lines 51-58)

As can be seen by the cited section above, the threshold of Rost is calculated by varying the thresholds in accordance with an attenuation to provide improved target detection.

The Examiner further asserts that the limitation of claim 25 is further limiting "the first threshold value" provided in parent claim 17, wherein claim 17 specifies a "threshold calculation module further adapted to...set a first threshold based upon the estimated first pulse amplitude." Therefore, claim 17 does not require a definite calculation, but rather a setting based on an estimated value.

Appellant argues:

> Claims 20, 37 and 45 were rejected in the Final Office Action based upon Carsella in view of Reddy and further in view of De Carolis. De Carolis is relied upon as showing a dielectric constant calculator for determining the dielectric constant of a material. However, dependent claim 20 states that the calculated dielectric parameter is provided to the threshold calculation module for use in establishing a level of the first material interface. There is no suggestion in the references that the De Carolis reference could be combined with the others to arrive at the claimed invention. In fact, as the Reddy III reference directly measures threshold values, there would be no reason to attempt to calculate a dielectric parameter as taught by De Carolis.

Similar to the arguments provided above, the Examiner asserts since the invention of Reddy, III teaches calculating the thresholds based on normal reflection that can be expected and Carsella teaches that the normal reflection should be adjusted based on the dielectrics, such a combination would calculate a threshold as a function of an amplitude of the reflected pulse and the corresponding dielectrics entered to correct the amplitude.

Appellant argues:

> Claim 37 states that the first threshold value is further a function of at least of an offset value and temperature while claim 45 states that the first threshold value is further calculated as a function of temperature. De Carolis does not show calculating dielectric constant of a function of temperature. Further, claims 37 and 45 describe a first threshold value which is a function of (or calculated as a function of) temperature. This is not shown by the De Carolis.

The Examiner asserts that the invention of De Carolis is not relied upon for a teaching of calculating a dielectric constant as a function of temperature. Instead, the Final Office Action indicated that:

> As noted above, the invention of Carsella and Reddy teaches many of the features of the claimed invention and while the invention of Carsella and Reddy teaches setting dielectric constants of the materials which are provided in order to determine material interface thresholds, the combination teaches inputting the dielectric constants by an operator rather than by a dielectric constant calculator.

The Examiner also notes that claim 37 only requires that "the first threshold value is further a function of at least one of an offset value and temperature" and claim 45 requires, "wherein the first threshold value is further calculated as a function of

temperature." These limitations do not require inputting or measuring a temperature and using such a temperature in a specific calculation, but rather only require that the thresholds are calculated as a function of temperature.

As described above, the combination of Carsella and Reddy, III, calculates thresholds based on the dielectrics of the materials. Carsella also discloses:

> The dielectric constant varies with temperature and with purity of the material. (column 5, lines 5-6)

Therefore, since the combination of Carsella and Reddy, III, calculates the thresholds based on the dielectric constants of the materials and further specifically indicates that the dielectric constant of the fluids vary with temperature (Carsella, column 5, lines 5-6), one having ordinary skill in the art would recognize that the thresholds are calculated as a function of temperature.

Appellant argues:

> Claim 44 was rejected in paragraph 6 of the Final Office Action based upon Carsella in view of Reddy and further in view of Kielb. Claim 44 describes receiving the dielectric constant of a material over a process control loop. The Kielb references is cited as illustrating receiving commands from a control room over a process control loop. Kielb does not describe receiving the dielectric constant of a material. Further, there is no suggestion to combine the two references: In fact, the Carsella reference teaches away from such a combination. Carsella describes the use of a two-wire process control loop (column 3, lines 19-22). However, despite having access to a two- wire process control loop, Carsella still describes receiving information relating to the dielectric of the media from an operator through a keypad or a switch button interface 36 (column 5, lines 30- 37).

The Examiner first asserts that the invention of Kielb is not relied upon for teaching receiving dielectric constants, but rather the Final Office Action indicated that:

> As noted above, the invention of Carsella and Reddy teaches many of the features of the claimed invention, and while the invention of Carsella and Reddy does teach the radar transmitter with a keypad for entering information related to properties of the materials received from an operator (i.e. dielectric constants) (Carsella; column 5, lines 30-37) connected as part of a process control loop (Carsella; column 3, lines 19-28) for connection to remote devices (Carsella; column 9, lines 8-11), the combination does not explicitly indicate that the information is received over the process control loop.

Therefore, it can be seen that Carsella already discloses entering dielectric constants and other information into a system connected as part of a process control loop, but does not specify that the information is received over the loop.

Kielb the makes up for the deficiency by teaching a two-wire level transmitter for sensing the level of liquids in a tank (column 1, lines 40-58) connected over a process control loop (column 2, lines 10-13) wherein commands are set to the transmitter from a control room over the process control loop (column 4, lines 49-58).

The Examiner further asserts that Carsella's teaching of having both a two-wire process control loop as well as an operator interface does not teach away from the combination as nothing in Carsella indicates that the inputted information cannot be obtained via the loop.

The Examiner further asserts that it would have been obvious to one having ordinary skill in the art to modify the invention of Carsella and Reddy to explicitly indicate that the information is received over the process control loop, as taught by Kielb, because the invention of Carsella and Reddy does implement a process control loop for remote communication and, as suggested by Kielb, the combination would have reduced the burden of the user by not requiring the user to be local to the tank being monitored but instead allowing the user to input information and/or commands, such as the information related to properties of the materials received from an operator in Carsella and Reddy, from a remote location (column 4, lines 20-32 and 49-58).

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Jeffrey R. West JRW

Conferees:

Ricky Mack RM

Eliseo Ramos-Feliciano

ELISEO RAMOS-FELICIANO
SUPERVISORY PATENT EXAMINER